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Technology: L&D prevention. Fifth of a series

June 30

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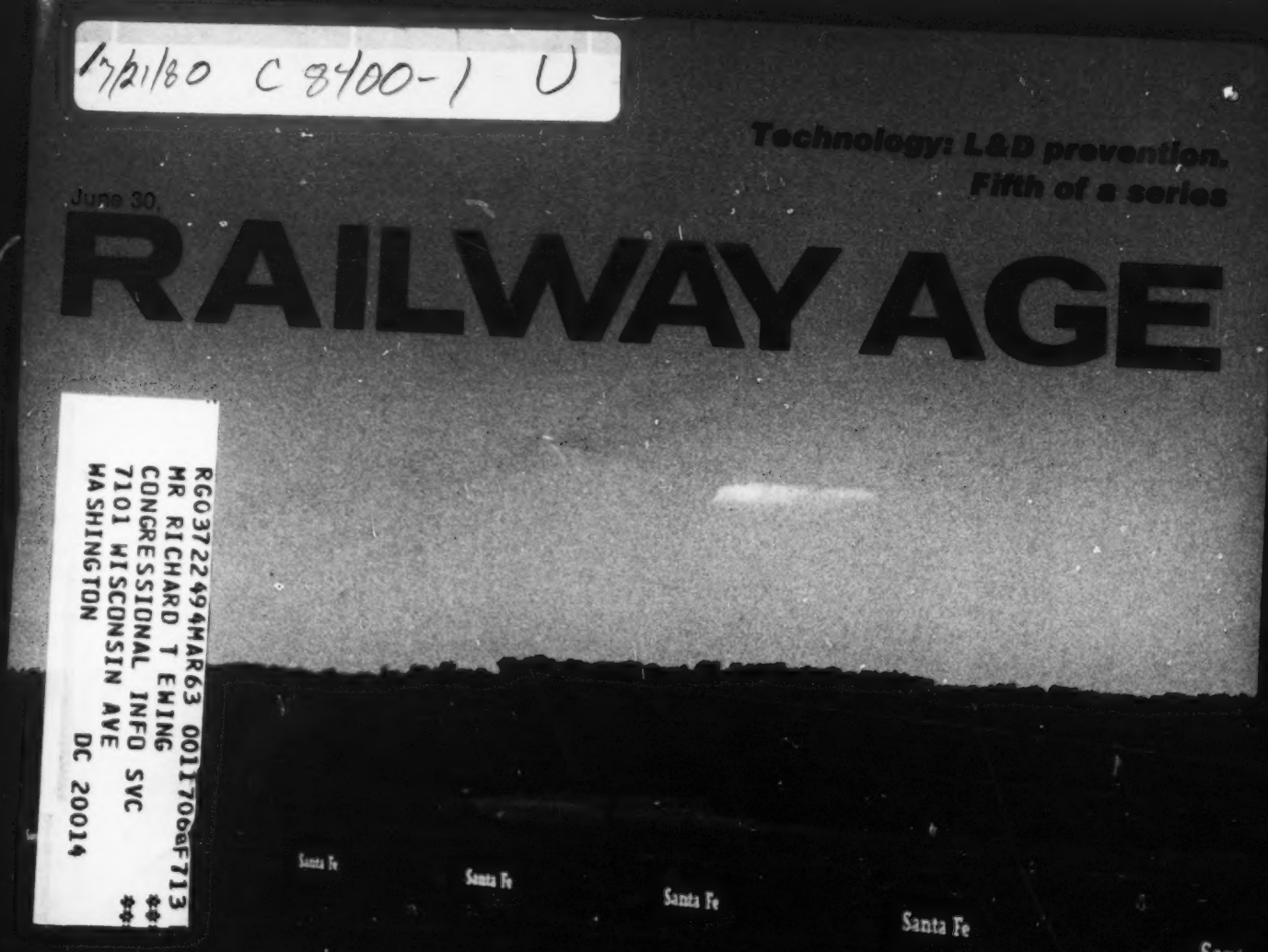

Commodities: Grain by train

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Inside

LUTHER S. MILLER

RAILROAD BOOK OF LISTS

It's called "The Economic ABZ's of the Railroad Industry"; it was compiled by the Economics and Finance Department of the Association of American Railroads; it's available from the AAR at $25 a copy; and it's clearly destined to be a best-seller. This new publication is essentially a book of lists—around 125 pages of them—covering every aspect of railroading. It is presented, as a brief preface points out, "in a simple statistical format intended for use as an educational tool—both as a primer for those seeking the basic economic tenets of railroading and as a reference source to those able to employ such data in their endeavors." Ounce for ounce (and this one weighs in at 1 lb, 7½) it's the single most valuable statistical reference work we have come across in 25 years of writing about railroads.

A completely new edition of "The Economic ABZ's" will be published every five years. An annual supplement will be available in off-years, for $5; each of these supplements will provide raw statistical data for the prior year.

Inquiries should be addressed to the Economics and Finance Department, Association of American Railroads, 1920 L Street, N.W., Washington, D.C. 20036.

At a time when most of the big roads are involved in merger proceedings, one of the lists is particularly interesting—that which shows the 20 biggest carriers ranked by freight revenues. To this list we have added net income. (An addition that makes the interesting point, for example, that Southern and Norfolk & Western, while they ranked only sixth and seventh in revenues last year, looked rather more impressive on the bottom line: NW was the industry's biggest moneymaker and Southern was the third biggest). Here's our revised list:

THE TOP TWENTY RAILROADS
(1979)

Carrier	Freight revenue (000)	% of total	Net income* (000)
Conrail	$3,155,433	13.20	($487,631)
Burlington Northern	2,370,650	9.91	175,221
Southern Pacific	1,882,271	7.87	56,514
Santa Fe	1,828,001	7.64	128,036
Union Pacific	1,711,508	7.16	149,142
Southern	1,426,998	5.97	160,622
Norfolk & Western	1,378,116	5.76	198,596
Missouri Pacific	1,374,811	5.75	110,027
Seaboard Coast Line	1,015,652	4.25	135,466
Louisville & Nashville	945,916	3.96	28,779
Baltimore & Ohio	877,941	3.67	56,068
Illinois Central Gulf	780,804	3.26	(32,072)
Chesapeake & Ohio	768,050	3.21	118,129
Chicago & North Western	669,472	2.80	(36,744)
Frisco	424,982	1.78	19,753
Milwaukee Road	392,269	1.64	(105,178)
Rock Island	336,050	1.41	—
Soo Line	283,432	1.19	27,568
Cotton Belt	258,499	1.08	36,777
Denver & Rio Grande Western	251,484	1.05	27,670

*Source: ICC

RAILWAY AGE

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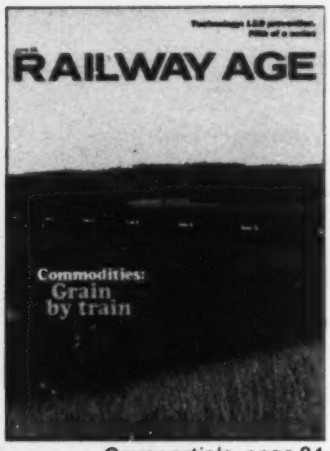

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The recent performance of grain-hauling railroads will be a tough act to follow: In the 12 months ended March 31, they hauled an average of 92.1 million bushels a week, but while uncertainty clouds the immediate future, the granger roads are solidly optimistic for the long term.

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COVER: Santa Fe grain train was photographed by J. F. Curto, manager-photographic and audio visual service, Santa Fe.

COMMODITIES BY RAIL

GRAIN

Granger roads gear up for long-term growth

By GUS WELTY, Senior Editor

The numbers are mind-boggling:

—For the first four months of 1980, local carloadings of grain on Missouri Pacific were up by 71% over loadings for the same period last year. Grain tonnage was up by 80%.

—For Burlington Northern, January-April grain shipments ran 41% higher than in the year-earlier period, up from 210 million bushels to almost 300 million bushels.

—Five-month figures for Santa Fe showed a carloadings increase of better than 47%, with a 60% jump in loadings of nontransit wheat alone.

—Grain traffic gains on Union Pacific, January through May, were paced by a 45% increase in shipments destined for the West Coast.

—For the railroad industry as a whole, loadings for the first 22 weeks of 1980 totaled 624,626 cars, up by 23% from 1979 and by more than 20% from 1978 for the same reporting period.

—In terms of carloadings, the record year was 1973, with movement of about 1,682,000 cars of grain. But for sheer volume in a 12-month period, the number to top came in the 12 months ended March 31 of this year, a period in which railroads moved an average of 92.1 million bushels per week.

With performances like these to look back upon, what do railroads do for an encore? For an encore, the railroad grain shipping system has the capability to do just about anything demanded of it: Grain-moving capability, by almost any measure, not only is there but will grow to meet anything now foreseen.

● **What's helping?** Several factors have contributed to the past year's showing and to the industry's ability to handle grain in increasing volumes:

—The first quarter of 1979 was not all that great for grain movement, in part because of weather conditions. But then volume picked up sharply. And when the winter of '79 came, it turned out to be the tamest in several years, thus smoothing out patterns and allowing rail carriers to head into the new season without having to play catch-up on an unfilled car order backlog.

—Holding for power has become less common as railroads have kept locomotive builders working at high production levels for the past couple of years. As of late spring, the motive power fleet was up by 800 or more units from the year-earlier level.

—While much of the attention in the freight car market over the past several years has been focused on the large number of boxcars joining the fleet (many of them short-line-marked cars acquired in large part to generate car-hire income for the underlying lessors), there have been steady increases in the number of covered hopper cars coming on line, especially the most-in-demand jumbo covered hoppers. As of mid-May, railroad and private ownership of the high-capacity cars was within a whisker of the 200,000-car mark, and fleet capacity was reflecting these additions: Between Jan. 1, 1978, and April 1, 1980, total capacity of the grain car fleet climbed from 678.5 billion bushels to about 763.4 million bushels, even as the fleet of aging and obsolescent (if not outright obsolete) 40-foot plain boxcars continued to shrink, from 86,460 cars at the beginning of 1978 to a few more than 53,000 cars this past spring. The trends appeared to be continuing in 1980: Through the first four months, more than 9,400 new covered hopper cars were placed in service, and new orders went onto the books for close to 5,600 cars; on both delivery and order sides, there was more activity in covered hoppers than in any other car type.

—There was a spate of new thinking from the Interstate Commerce Commission, which cut back sharply from past practices of interfering with grain movement through imposition of restrictive orders. Before spring of 1979, the commission had a habit of putting restrictions on use of jumbo covered hoppers in unit train service. ICC's intent was to make more cars available to small shippers at times when car supply was tight—but commission reasoning ignored the fact that unit train operations are far more efficient in moving grain in volume and, far from helping, the restrictions tied up more cars for more time, slowed down grain movement, and thus made car supply problems even worse. In early '79, however, the ICC lifted most of these restrictions—and that action played a major role in allowing the rail industry to set its spring-to-spring grain-hauling volume record.

(That record was all the more remarkable because it was achieved despite a number of disruptions in grain-moving patterns. There was, for instance, a grain handlers' strike at the Head-of-the-Lakes, where the ports at Duluth-Superior normally take care of 15% of the grain moving by rail to ports for export. There were the strike by the Brotherhood of Railway and Airline Clerks and the Un-

A decade of fluctuation in carloadings. . .

	Grain	Grain mill products
1970	1,468,000	993,000
1971	1,294,000	949,000
1972	1,356,000	983,000
1973	1,682,000	1,066,000
1974	1,485,000	1,023,000
1975	1,343,000	995,000
1976	1,326,000	1,010,000
1977	1,250,000	997,0900
1978	1,341,000	973,000
1979	1,428,000	917,000
1980 (22 weeks)	624,626	381,473

. . .and steady growth in the covered hopper fleet

On Jan. 1	Class I railroads	Private	Total*
1971	130,954	38,972	170,742
1972	138,099	41,045	179,919
1973	141,642	43,910	186,219
1974	150,499	53,771	204,926
1975	154,302	64,081	219,362
1976	156,850	70,029	228,265
1977	158,850	70,145	230,069
1978	161,246	73,103	235,829
1979	161,903	80,775	246,087
1980	164,959	98,643	268,919

*Includes other-than-Class I railroads

(especially in the "jumbo" fleet)

1978	94,621	54,075
1979	99,902	61,860
1980	106,249	79,703
1980 (May 15)	112,448	85,959

ited Transportation Union against Rock Island, a major grain hauler, the subsequent collapse of the Rock, and the entry of Kansas City Terminal onto RI as directed-service carrier. Last year a series of embargoes had to be issued against elevators at various ports as port elevators filled up, ships didn't arrive as expected, and there was simply no place to put inbound grain. Finally, there were basic changes shaping up in export patterns in which Pacific Coast ports assumed new importance. From 1978 to 1979, grain unloadings at Pacific ports were up by 64%, and while movements to the West Coast generated more revenues from the longer haul, they also increased turnaround times on equipment.)

● **What lies ahead?** Almost uniformly, major grain-carrying railroads are solidly optimisic for the long term—and solidly uncertain about the short term. Among the short-term questions:

—Will the weather continue to cooperate, as it has thus far in 1980? Reports from several railroad agricultural development departments seemed generally positive on crop progress through May and June, especially with respect to winter wheat, feed grains, and soybeans, and just a couple of weeks ago the U.S. Department of Agriculture boosted its forecast of winter wheat production to a record 1.76 billion bushels, up from 1.61 billion last year and well ahead of the old production record of 1.64 billion set in 1975.

—What pattern will export movements take? At the time the Administration imposed its embargo on exports to the Soviet Union, there were dire predicitons about the impact on rail grain volume, but for the most part the predictions turned out to be direr than the fact. Exports to Mexico took up some of the slack, as did exports to other overseas countries, and one recent estimate indicated that grain exports to the People's Republic of China might well top exports to the USSR in dollar volume.

—Will labor disputes create problems, as they did in 1979? Railroads, with an agreement stretching ahead to next April, are not anticipating industrywide problems, but there could be scattered flare-ups, and there is always the possibility of work stoppages at ports or elevators tying up operations.

—What relationships will develop between movements of stored grain and the

new harvest? Volumes carried this year indicate that a substantial amount of grain has been moved from storage, but a sudden dumping of grain onto the market at the time the new harvest is coming in could cause problems.

In all of these questions, however, some encouragement is mixed in with all the uncertainty. Last year, railroads had to cope to some extent with every one of the conditions noted—good weather that produced a good harvest, changes in export patterns, labor disputes, and the dumping of stored grain—and railroads, though they did have problems, still were able to perform at a record-setting pace.

● **Optimism for '80.** Even though May saw some slackening in demand, which could create surge problems later as harvest neared their peaks, major grain-haulers were thinking positively.

Burlington Northern, for example, was staying current on shipper car orders, even with the sharp increase in the number of bushels handled this year (which had tapered off to a 25% gain through May). One reason: Deliveries are continuing on orders for 2,200 new high-capacity covered hopper cars, about $90-million worth of grain-carrying capacity. BN grain experts warn that, while the Russian embargo has not had major impact thus far, it does create a certain uncetainty regarding rail shipments later in the year. At the same time, BN remains hopeful that the harvest can be handled adequately when it is in full swing, and that the record volume of the first four months of 1980 will turn out to be a "favorable omen."

Calling attention to increases in terminal elevator storage capacity and substantial increases in the covered-hopper fleet, Missouri Pacific found itself "more optimistic than we have been in 10 years about our ability to meet grain harvest requirements efficiently." MoPac sees the possibility of spot shortages occurring, "and we may not keep all of the people happy all of the time, but we're confident that we will keep most of the people happy most of the time."

Like BN, MP has added jumbo covered hoppers, with 1,000 new cars coming into service this spring. And like BN, MoPac has added a new wrinkle or two to grain movement. BN began applying the unit train concept to grain-gathering and-forwarding operations experimentally late in 1978 and had about 50 trainsets of equipment in dedicated service by the end of 1979; as a result it was able to move about 19% of its total grain volume last year in grain trains that required only about 6% of its grain-carrying equipment. Missouri Pacific's approach has been to inaugurate a shuttle-train system, also promising high degrees of equipment utilization, to move grain from country elevators to storage points in Kansas City, Wichita, Hutchinson, Topeka, and Atchison, Kan.

Santa Fe is equally optimistic, one reason being its foresight in beginning the switch to covered hopper cars many years ago. Fifteen years ago, Santa Fe notes, 190,000 carload movements were needed in order to haul 10.7 million tons of grain, while only 163,000 were required last year to haul 15.6 million tons, thanks to the replacement of inefficient, low-capacity boxcars with a fleet of covered hopper cars that has now grown well beyond 14,000 units in the jumbo category alone.

Shipper ownership/lease of equipment

Two big shippers look at the granger

Railroads are confident of their ability to move the grain and optimistic about the volumes of grain they'll be called on to move. But what about the customer? What's his view on such subjects as demand and movement patterns, railroad services, rail equipment supply, and the quality of that equipment? What changes in the system would he regard as desirable in order to help both the grain trade and the rail industry?

Railway Age put the questions to two customers with long-term relationships with the railroads—Cargill and Allied Mills—and got some very specific responses.

First, Cargill Vice President James V. Springrose observes that "over the past decade, the transportation of grain has been challenged to meet an ever-increasing world demand—and this has placed, almost without interruption, a burden on the rail industry to keep pace."

How has the industry reacted? "They have generally responded very well."

● **Traffic is more stable.** Freight car shortages, Springrose says, have been "more severe and have lasted longer than at any time in memory. But the reason has been growing demand and not more extreme cycles in the historic grain movement. In fact, in the same decade the cyclical nature of the movement has diminished, and the grain-marketing system is now far more susceptible to constant year-around volumes than ever before."

Allied Mills' Director of Transportation A. T. Walters points out that Allied buys grain and grain products throughout the year, and its movements "are on an extremely stable basis. In fact, when we commented on the peak-demand proposals before Congress and the Rural Transportation Task Force, we have highlighted the stability of the feed and poultry business. Car supply levels also indicate that the grain business has been less susceptible to the peak-and-valley gyrations found years ago when the majority of the grain was shipped in boxcars. The advent of jumbo cars and unit train service has gone a long way toward making it possible to even out the flow in these once-seasonal movements."

James V. Springrose
Cargill

Cargill's Springrose puts it this way: "Over the past 20 years, grain and grain products have undergone the transition from box to covered hopper cars, and the rapidity of this transition reflects the inherent efficiencies of covered hopper cars for railroads and shippers alike.

"Because the covered hopper car fleet is comparatively new, equipment quality is generally quite good, and the technology of current designs is satisfactory—although use of materials which reduce the tare weight would be a significant benefit in terms of energy-saving and light-density-track considerations. Actually," Springrose says, "our only preference in considering the choices of components on covered hopper cars is to insure that the gates are of rack-and-pinion design."

● **Methods are improving.** Springrose finds that "railroad methods for transporting grain have likewise improved in the past decade. These improvements have been largely influenced by the adaptation of grain marketing to unit

has been a big help in alleviating car-supply problems, and that trend is continuing. Between Jan. 1, 1978, and May 15 of this year, for example, the railroad fleet of jumbo cars went up by about 20%, while the privately provided fleet increased in numbers by more than 58%. Through April of this year, railroads supplied about 4,000 and private interests about 5,000 of the total number of covered hopper cars placed in service, but private buyers accounted for more than 5,000 of the 5,583 covered hopper cars reported ordered.

roads—and like what they see

A. T. Walters
Allied Mills

trains. Without unit trains, agriculture would have unequivocally failed in its attempt to break, and break again, grain export volume records. Unit trains, however, are not conducive to every kind of movement, and domestic applications of unit train concepts have been particularly troublesome because of the lack of concentration of volume and the need for product variety. Experiments with minitrains and/or sweep trains are in the early stages of development, and applications have been relatively sparse to date. As railroads merge and abandon duplicate service and light-density lines, we could see an expansion of unit and minitrain concepts to close the gap created by the resulting changes from what have been historic distribution patterns."

Allied Mills' Walters, while commenting favorably on development of jumbo covered hopper cars and unit train operations, does raise a different point regarding equipment: "I have often been amazed at the slow development of the so-called convertible hopper/boxcar. Periodically, we read about this, and it would appear that such a car would be highly desirable from a theoretical standpoint in the develoment of two-way loaded moves."

That particular concept, Walters adds, now may have its limitations because of the volume that unit trains can handle. Still, he says, "There are probably areas where this car would serve a very useful purpose—and maybe someday the concept will be more completely developed."

● **For tomorrow...** As for basic changes that may be coming in grain marketing and transportation and in rail transportation overall, Walters expresses confidence that "when the demand is received for changes in our existing system, the flexibility exists to meet this demand, though I don't believe those changes can be forced by some theoretical or arbitrary concept."

Springrose finds that "In general, the trends of the past decade have been positive, and my vantage point suggests that three important factors will influence continued development of a more efficient national railroad system. These are:

"First, rehabilitation and modernization of railroad terminals. Most yards were built before the turn of the century, with design that followed the needs and the projections available at the time. I believe the record shows that the real growth of the railroad industry in the ensuing years rendered these yards grossly inadequate. Their major drawback in today's environment is that they become the principal deterrent to higher productivity in times of heavy volume.

"Second, the current influence and direction of legislative and regulatory agencies of government toward contracted railroad transportation. The values of railroad contracts to carrier and shipper alike have been amply expressed. In short, they allow both industries to better plan their business and eliminate the lingering waste in the grain and grain products distribution system.

"Finally, the next decade should alter the intermodal traffic mix because of fuel cost and availability factors. Railroads have an inherent advantage here, one which is just beginning to surface. I assume that railroads are going to capitalize on it."

● **Not just more, but better.** As UP's grain specialists point out, merely adding more equipment isn't the ultimate answer—especially with the cost of covered hopper cars today and the likely cost tomorrow if inflation is not checked and reduced.

UP is looking for ways to get better utilization out of both railroad and shipper equipment and to wring costs out of the total transportation environment. These needs, some believe, may require changes in the next 10 years—maybe even the next three to five years—that are more dramatic than the changes that have taken place over the past decade or so.

Like other roads, UP has done its share of experimenting with the shuttle-train concept, with results that it regarded as good in terms of equipment utilization but with less than full shipper participation. From a railroad standpoint, loading from a basic origin area to a common destination makes sense—but, as the carriers recognize, this sort of operation can reduce the flexibility some shippers hold dear.

Then there is the matter of inspection, sampling, and grading of grain. For the most efficient grain transportation operation, some contend, these operations should be carried out at origin or destination, not at other points where inadequate facilities or other problems cause delays and interfere with good utilization of equipment.

● **The word: Cooperation.** For the 1980s and beyond, efficient handling of grain and its allied products clearly will require cooperation between carriers and customers to an even greater degree—with some degree of cooperation from government thrown in. These are just some of the angles involved:

—Customers' ability to flatten out still further the peaks and valleys of transportation demand. Good progress has been made in this area, especially in the past few years, but further stabilization efforts should perhaps be made (government and the weather willing).

—The railroad industry's ability to handle continuing increases in volume. Heavy spending for new equipment, by both railroads and users, has created what appears to be an adequate fleet, but it's a fleet that could stand an improvement in utilization.

—The impact of branch line abandonment programs and railroad mergers. Abandonment is an old story, with some roads writing more chapters than others, and it will continue to be written, because it makes little economic sense to trundle $50,000 freight cars over light-density lines barely able to handle them in the first place and then to let the cars sit at some remote elevator waiting for loading, pickup, and eventual trundling back to a main line for makeup into a forwarding train. Merger, on the other hand, is something

newer—at least in the West, where the grain grows tallest—and traditional marketing patterns could well change because of it. For example, Burlington Northern-Frisco merger will give BN single-line service to eastern Gulf Coast ports, while merger of Union Pacific with MoPac would open the Gulf Coast to UP for the first time, thus expanding market opportunities for UP grain shippers.

—Government action. Traditionally, government has played farm policy as a political instrument, domestic and most recently foreign, and this is something that transportation agencies may simply have to make the best of. Given the production capacity of the U.S. and the world demand for grain (which tends to fluctuate more by location than by volume), export movements can be counted on to grow despite government's gyrations. Certainly, the Russian embargo has not had the impact originally forecast, at least not yet. Domestic policies, however, may continue to involve greater swings, depending upon whether elected officials regard it in their best interest to encourage or to discourage planting and upon whether they see advantage in being more or less liberal in support programs. One proposal now wending its way through Congress is not atypical of the differences of opinion that farm-and-rail-related legislation can produce: This bill, already approved by the Senate and by a House committee, would provide planning grants for concentration of storage facilities along rail main lines and major branch lines, as well as loans for construction or improvement of such subterminal facilities. It has the approval of some railroads—but not all. It caught flak from some shippers who saw it as government encouragement of branch line abandonment, even as supporters in Congress argued that instead it was an attempt to prepare for the abandonments that were going to take place in any event, a situation pointed up by what has happened this year with Rock Island and Milwaukee Road.

● **No tears.** But overall, amid uncertainty and occasional controversy, grain-hauling railroads decline the crying towel, as do major grain industry customers.

Who better to sum it all up than a man whose company started a long time ago to try to work with railroads to improve grain transportation, Cargill Vice President James V. Springrose of Rent-A-Train fame? Cargill may have been less than happy with the government's action against shipments to the USSR, but Springrose puts it this way: "Today's depressing post embargo times notwithstanding, we're optimistic about the continued growth and prosperity of agricultural related industries. I would expect the railroad industry to share in that prosperity, as a necessary link between producers and consumers." ■

How one big grain co-op

AGRI Industries is among those Iowa shippers that work closely with the railroads—sometimes even putting up cash in advance—to insure good service.

Railroads serving Iowa are learning that they have an aggressive customer in the state's biggest grain cooperative, American Grain & Related Industries (AGRI). Formerly known as Farmers Grain Dealers Association, the cooperative is taking a new market stance based on luring grain producers with futures trading, a proven approach of such private company competitors as Cargill, Continental, and Pillsbury. For the transportation needed to support its new competitiveness, the cooperative is both luring railroads with contracts that guarantee plenty of business and chasing funds for track-upgrading in the state.

"Where we can make a big impression is to guarantee that the revenue will be there, that this grain will be marketed, and we'll write contracts for both service and rates guaranteeing that the volume will be there," says Maurice Van Nostrand, AGRI director of market research.

A former Iowa Commerce Commission chairman (1971-79) and before that a state legislator, Van Nostrand can claim involvement with railroads going back many years. That includes operation of his own grain business in southwestern Iowa. He says shippers in Iowa generally have grown accustomed to the idea of some sort of contractual affiliation with railroads, though often they've been motivated more by circumstances than by other considerations.

That's especially true of shippers participating in shipper/state programs for financing track repairs on the Rock Island. Van Nostrand says AGRI can muster its members for still broader participation in such programs, in which shippers get a fairly quick return of interest-free money, paid back on a per-car basis.

Such arrangements, in fact, are probably the best kinds of contracts, says Willard R. Clarkson, AGRI grain division assistant vice president-rail transportation. "Cash advanced is better than a signature on a contract, because the shipper knows he'll have to provide the volume to get his money back," Clarkson says. Both he and Van Nostrand, however, see AGRI and its members getting in more deeply through service/rate contracts. But Clarkson says they want contracts based on incentives rather than penalties and including receivers as well as shippers for the best possible control of a movement.

● **"Clout by volume."** The fact that shippers have been willing to put up money—for fast-loading facilities and their own car fleets as well as for track work—shows they're sure they can provide the volume, Van Nostrand says. From there, it's just a short step to contracts specifying volumes and service levels, as well as rates. It's a "clout by volume" approach that takes into consideration the railroad's right to a reasonable rate of return. But one thing Van Nostrand and Clarkson are wary of is covering a railroad's costs incurred elsewhere on its system. In that, they share many other shippers' concern about "cross-subsidization," that is, being forced to carry a larger load through rates than warranted by their own requirements.

They think Iowa shippers have already done plenty of that, especially with regard to the Rock Island. They cite members' financing of track repairs in Iowa while the Rock Island carried out its own rehabilitation in other states. That applies to other railroads in Iowa, too, and that's why shippers now wonder how much more they can be expected to do.

"We have to have railroads capable of providing the service that we need, but we are not willing to pay a premium," Clarkson says. "We know we're going to have to pay the legitimate costs of a reasonable level of service, but we can't cover losses generated elsewhere," Van Nostrand adds.

About 30% of AGRI's 325 members have invested in facilities for fast loading of 25-car minimum trains, have bought or leased cars, and have put up money for track repairs. Some of those shippers are on the Milwaukee Road's north line across Iowa, where AGRI operates a shuttle train under Van Nostrand's notion of a contract rate: "Milwaukee furnishes locomotives, cabooses and crews, and we furnish all the cars. We dispatch from our Mississippi River elevator at McGregor every morning. The train serves 21 elevators, but no more than five at a time with no fewer than five cars per stop. That's how I like to think of contract transportation. We're not just talking a rate, we're talking a guarantee of revenues to the railroad, a guaranteed number of miles, and we're guaranteeing

FIFTH OF A SERIES

Railroad technology

L&D prevention

Forging new weapons for the war

If railroads are serious about trying to wipe out waste, then the prevention of freight loss and damage has to rank right up there at the top of the priority list. Because, as Southern Railway President Harold H. Hall puts it, "the waste that hurts the most. . .is the waste involved in damage to our customers' freight or to our equipment. This is really money down the drain—not to mention good will gone the same way."

Last year, more than $328 million went down that drain in direct payout costs. This was an increase of about $23.6 million over the 1978 figure, but it is possible to find good things in the industry's '79 performance on L&D: The ratio of payout to freight revenues was 1.20%, lowest since 1955; the number of new claims filed was a bit more than 2.1 million, lowest since 1936; and if it hadn't been for the inflation that occurred between 1978 and '79, payout last year would actually have declined by 4.2% instead of increasing by 7.8%. Nevertheless, freight loss and damage cost railroads the use of more than $328 million last year, and that hurts, whether the dollars are inflated or not.

Can technology help to cut the cost of L&D? It can, in just about every technological "discipline" involved in railroading, from the design of classification yards to the use of highly sophisticated equipment to give locomotive engineers better training in train-handling and the development of improved load-restraining devices.

● **Three areas of attack.** If you look at the causes of loss and damage, it's not hard to spot areas where technology can help: Out of the 12 cause categories into which the AAR separates L&D payout, only three accounted for more than 3% of the total—and all three are susceptible to a hardware-oriented attack.

Ranking third on the list last year was robbery, theft, and pilferage. Better locks and seals won't eliminate these problems, but they will help to keep them under control.

Ranking second in '79 was train accident, which resulted in more than 26% of total L&D payout: The Track/Train Dynamics program and other industry/supplier/government programs are taking dead aim on the laudable goal of keeping trains on the track, and they should soon be paying off in terms of design improvements that will cut the derailment rate.

Ranking first in 1979, as usual, was the catch-all Category 3, all damage not otherwise provided for (damage for which no specific cause can be attached). This accounted for 50.02% of total payout, and here is where specific technological developments may have their best shot, at least for the short term.

The need still exists for giving engineers more precise training in getting their trains over the road smoothly, just as the need is still there for improving lading-protection devices and getting them installed on more cars in the fleet. Fortunately, both of those needs are being worked on. More railroads are making use of such devices as FreightMaster's Mobile Train Handling Simulator, for example; and more and more suppliers are lining up for the kind of organized test program the AAR's Freight Claim and Damage Prevention Division has been able to set up. Further, the division's data collection system is making possible a far more precise analysis of where damage is occurring and why—and this is helping to encourage the improvement of loading and unloading operations and the development of better lading protection equipment. As one AAR officer puts it, "When we can walk in with a computer printout that pins damage down to specifics, we gain a certain amount of credibility."

● **Emphasis on prevention.** It wasn't always this way. For many years, loss and damage was regarded as just another cost of doing business, reflected in a number of ways. Until fairly recently, L&D claim *prevention* was relegated to a secondary status in what was called the AAR Freight Claim Division. Companies such as Evans and all the manufacturers of cushion-underframe and end-of-car cushioning devices slogged along trying to get their equipment adopted against opposition based partly upon initial cost and partly upon that time-honored railroad theory that when you start hanging a lot of jewelry on a railcar it's going to cost more than it saves; meanwhile, railroads just watched as high-rated business went to trucks.

Fortunately for the rail industry, both of those old hang-ups have been hung up: Within the AAR organization, prevention now has at least equal status with the business of paying claims, and among both suppliers and railroads, there is increasing interest in the technology of damage prevention. For example, AAR's test program for damage prevention devices, placed in effect not a long time ago, has handled close to two dozen tests, has 18 in the active test stage and is looking at proposals for testing of seven or eight more devices.

R. A. Grover is AAR's director-damage prevention, and he takes second place to nobody in his enthusiasm about what has been happening in damage prevention in recent years. Supplier interest, Grover says, "has been tremendous." Before '75 when the test procedures were formalized, he points out, suppliers "just wandered about. . .but now we have es-

Portec's total systems approach has paid off

Motor vehicles: Despite advances, problems persist

If you look only at the raw numbers on freight claim payout on motor vehicles and parts, you get a sinking feeling: On an 11% decrease in carloadings of vehicles and equipment last year, payout was up sharply—by 8.5% to $92.5 million on cars and trucks and by 33.1% to more than $8.8 million on parts. Together, vehicles and parts accounted for 30.9% of total loss-and-damage payout, up from 30.2% in 1978.

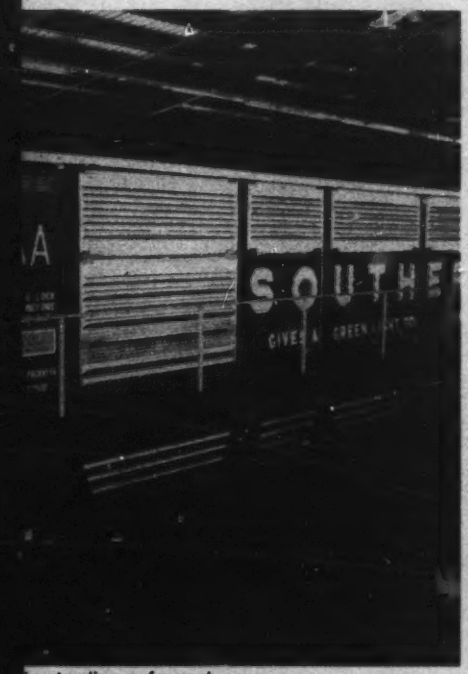
Yet the fact remains that the AAR, indi-

against waste

tablished procedures for testing—and those procedures clip right along. It doesn't take a long time to come to go or no-go decisions. What we have is a system that makes it a lot easier for all concerned. Testing is a lot more accurate, and we've eliminated a lot of seat-of-the-pants flying in damage prevention."

● **More R&D, more testing.** The work of research, development, and testing for L&D prevention is not very exciting; a lot of it is duller than watching paint dry. But Grover and FC&DP Division Executive Director J. C. Hindman—as well as a growing number of railroads and suppliers—are looking at bottom-line impact, and that accounts in large part for the renewed and increased interst in development and testing of damage-preventing equipment.

In recent times, for example, AAR Damage Prevention Section people have been working with manufacturers of such products as load-restraining devices for



in sturdier, safer rack cars.

vidual railroads, and a number of suppliers have made significant strides in the past few years in the damage control area.

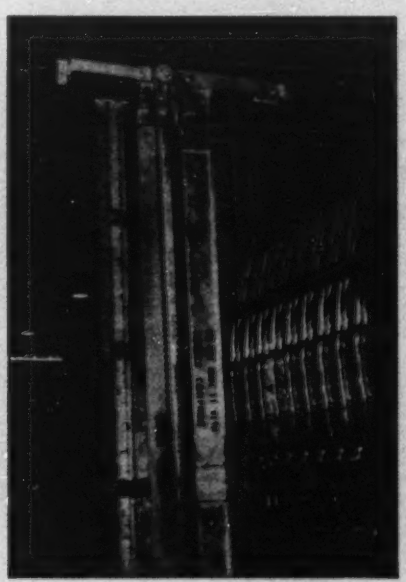
Item: AAR's Damage Prevention Section was scheduled to complete its audit of automobile loading ramps earlier in June; meanwhile, the monitoring program was also being applied at destination ramps. Thus far, AAR says, it has been "very pleased" with the response of both railroads and customers: "We find that many of the recommended corrections are being made even before the audits are completed."

Item: Improvement in racks and tie-down equipment is reducing the potential for damage during the rail line-haul. At Portec, for example, this has taken the form of a total systems approach, with the Shipping Systems Division developing improved securement devices such as the Model 1090 unidirectional, low-profile, tie-down winch and the Railcar Division working to make the racks themselves sturdier and more protective of the valuable cargo.

Item: Earlier this month, the Engineered Products Division of Evans Products' Transportation Systems and Industrial Group introduced a new DF stanchion system to prevent damage in shipment of auto parts. The new device, which comes four stanchions to a car set and is available in steel or aluminum, is lighter in weight and, Evans says, safer than the bulkheads that have been used in parts cars.

● **Costs vs benefits.** Of course, despite these advances by all concerned, problems remain. End doors on racks have been something of a problem, in good part perhaps because ramp personnel are less careful than they should be in making sure doors are secured before cars are moved. Despite the increased sophistication of the equipment and the increase in the enclosed-car fleet (now 23% of the total), motor vehicle payout increased most last year in the catch-all category and in the category covering robbery, theft, and pilferage. Ironically, after all the pressure that had been applied by the automakers to get more fully enclosed cars into the fleet, one builder is finding that with the downturn in the economy, two auto manufacturers are again specifying an older version of the protected rack, the one with screened sides but no roof and no end doors—a trade-off, apparently, between increased risk of vandalism and a savings of about $16,000 per rack.

Obviously, the battle to reduce damage costs on automotive industry traffic is far from won. But on the other hand, you have to wonder how high payout would have rocketed had the AAR, the carriers and suppliers *not* undertaken the safe shipping and product development programs that have been put in place in the past several years.



Over many years, a variety of damage-preventing bulkhead systems have been developed by a number of manufacturers. One of the most popular with shippers: Evans Products' single and dual Air Pak systems, the single for loads that come close to filling the length of the car, the dual for stopoff loads or loads that leave a substantial void.

freight cars and piggyback trailers, various kinds of wrapping materials, plastic and steel strapping, lading barriers, inflatable dunnage bags, buffer materials, and void fillers. They have worked with more than a half-dozen manufacturers on problems of packaging materials and design. They have worked with shippers of such commodities as furniture, building materials, petroleum products and chemicals, farm and food products, farm equipment, primary metal products, appliances, electronics equipment, and, of course, automobiles and trucks.

The full test procedure for a new damage prevention procedure or device may cover a six-month period and will include standardized impact testing, movement of 25 test loads and a thorough analysis of results, followed by approval or disapproval by the Damage Prevention Committee.

● **Test procedures.** For both impact testing and loaded-movement testing, AAR has attempted to develop standard procedures that are both fair and detailed. Impact testing, for instance, requires that a test car be shoved, released, and allowed to roll into a cut of buffer cars (with brakes set) four times at precise coupling speeds. The first three impacts must be at speeds of 4 mph, 6 mph, and at least 8 mph, and the fourth impact must be on the opposite end of the test car at least 8 mph, with no readjustment of the lading or reconditioning of bracing or securement devices permitted during the testing. Impact speeds must be accurately recorded, along with the results of each impact on blocking and lading.

Movement-test requirements are no less detailed. Here, AAR requires that enough cars or trailers be used to insure that a minimum of 25 reports are developed and, depending upon circumstances, it may also require comparison data on at least 25 shipments that utilize an already approved shipping method. Each of the required reports must include both origin and destination inspections, with the proponent of the new system responsible for 15, the origin and destination carriers five, and the Damage Prevention Section five. After analysis of the resulting data, reports go to the Damage Prevention Committee, which has to give the go or no-go decision on a proposal.

Obviously, some new procedures make it—and some don't. One that made it, on the basis of a 28-car test, was a proposed wedge-block method for lengthwise bracing of plywood loads in cushioned cars only. This test began early last year and involved test movements in both standard and cushioned cars. It didn't pan out in cars equipped with standard draft gears; load shift and wedge-block failure were excessive, and the Damage Prevention Committee issued a "no" vote. But later in 1979 the shipper and the carrier that had requested the tests in the first place came back to the AAR, asking that tests continue in cushioned cars only.

AAR ran tests on an additional 15 cars, added the results to its results from 13 cushioned-car movements in the initial series, and came up with a 92% success rate from the two experimental series of movements. Result: The committee recommended approval of the bracing method for use in cushioned equipment and sent that recommendation out with the required letter ballot.

Another recent test series involved the use of a buffer material for disposable inflatable dunnage in the movement of canned goods. On this proposal, testing didn't get beyond the impact-test stage. Inspection showed that some of the buffer material was crushed and deformed, a bag was punctured, and cans were dented. The committee concluded that this particular loading and bracing method was not able to withstand the standard impact test, and therefore judged it not adequate for use as buffer material with disposable inflatable dunnage for the type of load tested.

L&D payouts in 1979

Cause	Cost
Shortage, packaged shipment	$ 5,484,348
Shortage, bulk shipment	9,001,759
All damage not otherwise provided for	164,074,813
Defective or unfit equipment	5,853,860
Temperature failure	8,937,722
Delay	6,936,798
Robbery, theft, pilferage	23,541,482
Concealed damage	1,484,143
Train accident	86,317,820
Fire, marine, and catastrophe	6,461,390
Error of employee	3,916,748
Vandalism	3,018,959
Total	$328,009,842

● **Pinpointing L&D problems.** Standard test procedures are just one new weapon which AAR (along with railroads and suppliers) can bring to bear on loss-and-damage problems. Another is the new and expanding data base for L&D prevention.

This system has a long way to go before it is perfect—but it's getting there. As of the first of this year, Seaboard Coast Line and Louisville & Nashville began feeding data into the base, joining Santa Fe, Burlington Northern, Conrail, Southern, Southern Pacific, Long Island, and Detroit, Toledo & Ironton; the Family Lines roads came in later. The file now covers almost 50% of the total freight claim payout by AAR member roads.

AAR's Grover calls the data systems approach "a tremendous advance" that makes it possible for prevention specialists to pinpoint damage by location, route, carrier, shipper, receiver—and to do this without turning the Damage Prevention Section into a paper factory. One basic printout turns up leads that the specialists can follow up by going back into the computer for more detailed information.

● **What lies ahead.** Given the advances in testing procedures and in the damage prevention information capability, what is ahead for damage prevention, and where do the opportunities lie? What lies ahead is a prevention effort that should more than keep pace with inflation (as in 1979). As for opportunities, a look at the '79 numbers indicates that there are several:

—Robbery, theft, and pilferage cost the railroads more than $23.5 million last year, 7.18% of the total freight claim bill and an increase of 20.1% from the amount reported for 1978. AAR people see help coming from use of such devices as cable locks, cone locks, and secondary hasps. Improved lighting and fencing in terminal areas would help, as would be a beefing-up of railroad security forces and (where possible) scheduling of movements through high-crime areas to keep trains rolling with a minimum of stop-start operations that provide hit-and-run opportunities for looters.

—The cost of vandalism in '79 jumped by 24.2%, on an increase of almost $590,000, of which $433,421 was accounted for by vandalism on transportation equipment. Of the total payout for vandalism of $3,018,959, more than $2.4 million went for damage to motor vehicles, no other single commodity accounting for as much as $100,000. Enclosed railcars and more of them have to be the answer.

—Better track, better equipment, and improved train-handling would go a long way toward cutting the L&D bill, since accidents did account for 26.32% of total payout in '79. This, of course, is an area where all rail technologies have to come together—but it's also an area where results can fluctuate wildly from year to year. For example, last year train accident costs dropped sharply for damage claims on chemicals and allied products while accident costs shot up on freight-forwarder and shipper-association traffic.

—Coal shipments in '79 increased by 18.7% while L&D payout climbed by 40.1%. More than half of the increase was attributed to train accidents, but more than $1 million came under the category Shortage Bulk Shipment, which could point to a need for spray-coating of loads at origin to prevent loss enroute. (Less significant, but somewhat hard to figure on coal shipments, were a few other numbers for 1979: Railroads paid out $13,453 for theft of coal, $601 for vandalism to coal—and $109 for "concealed damge" to coal.)

Technology won't prevent all loss and damage, but technology—low, medium, and high, stretching from improved equipment and component design to improved train-handling techniques and training—will help. And when an industry is paying out more than $300 million for nothing, help is clearly needed. ■

Market

CARLOADINGS

Loadings of revenue freight in the week ended June 7 totaled 451,326 cars, according to the Association of American Railroads. This was a decrease of 41,945 cars, or 8.5%, compared with the corresponding week last year. Ton-miles generated by carloadings in the week ended June 7 are estimated at 18.3 billion, a decrease of 2.8% below the corresponding week of 1979.

REVENUE FREIGHT CARLOADINGS

Commodity	June 7 week	May 31 week	May 24 week
Grain	26,261	19,794	24,104
Farm products	4,844	4,068	4,814
Metallic ores	38,093	32,399	37,307
Coal	121,232	102,306	116,446
Crushed stone, gravel & sand	15,984	13,547	15,655
Nonmetallic minerals	14,116	14,004	13,961
Grain mill products	16,712	15,071	16,078
Food and kindred products	17,779	16,558	18,225
Primary forest products	21,070	18,535	18,372
Lumber & wood products (except furniture)	8,880	8,051	8,770
Pulp, paper & allied products	21,228	20,277	21,038
Chemicals & allied products	25,169	22,782	25,133
Petroleum products	5,681	4,962	5,539
Stone, clay & glass products	15,503	13,347	14,791
Coke	4,699	5,022	5,308
Metals & products	14,696	14,379	16,072
Motor vehicles & equipment	16,548	14,012	14,826
Waste & scrap materials	11,478	9,961	11,753
Forwarder & shipping assn. traffic	10,343	8,498	10,259
All other carloads	40,837	34,496	41,170
LCL traffic	173	153	192
Total cars loaded	**451,326**	**392,222**	**439,813**
Cumulative total	**1980**		**1979**
23 weeks	10,134,628		10,343,816
Estimated revenue ton-miles (billions) 23 weeks	408.2		388.4

PIGGYBACK LOADINGS

U.S. piggyback loadings for the week ended May 31 totaled 27,240 cars (4,784 below the corresponding 1979 week) and 49,088 trailers or containers (down 10.4% from 1979). Cumulative volume for the first 22 weeks of 1980 is 722,247 cars (down 7.5% from 1979) and 1,310,509 (Revised) trailers or containers (down 5.1% from 1979).

CANADIAN CARLOADINGS

Canadian railway revenue freight loaded in the seven-day period ended May 24 totaled 5.4 million tons (down 5.8% from 1979). Cars loaded totaled 78,891 (down 6.7% from 1979). Cumulative loadings for 1979 were up to 94.5 million tons (up 7.4% from 1979).

● *Consolidation Coal Co.*—Is considering the purchase of the Canton Marine Terminal bulk facility and certain related assets of the Canton Co. of Baltimore, including the six-mile Canton Railroad. If the purchase is consummated, substantial additional expenditures will be made to convert the Canton facilities to permit their use for transshipment of coal to Europe, Japan and other importing countries as well as to east coast users in the U.S.

● *Norfolk & Western.*—Awarded $16,125,000 of equipment trust certificates to Merrill Lynch White Weld Capital Markets Group. The price of the successful bid was 100.3439% of par, at an average interest cost of 9.93%. The certificates issued under this trust will finance 80% of the $20.2 million estimated cost of 352 covered hoppers and 200 gondolas.

● *Railgon Co.*—Ordered 4,000 gondola cars for delivery starting in July. Pullman Standard will supply 1,500; Thrall Car, 1,000; Bethlehem, 500; Greenville, 500; and Berwick, 500.

● *Freight cars and locomotives.*—The following report has been received from the AAR and the ARCI:

DELIVERED

	April		March	Four months	
	1980	1979	1980	1980	1979
Built new by carbuilders	7,546	6,884	8,224	30,555	26,957
Built new in RR shops	347	432	571	1,809	1,733
Built new - total	7,893	7,316	8,795	32,364	28,690
Rebuilt	181	102	222	607	219
TOTAL DELIVERED	**8,074**	**7,418**	**9,017**	**32,971**	**28,909**
Locomotives	149	127	246	688	534

ORDERED

To be built new by carbuilders	2,851	7,799	3,471	15,908	51,490
To be built new in RR shops	2,650	0	0	2,650	500
To be built new - total	5,501	7,799	3,471	18,558	51,990
To be rebuilt*	36	93	68	869	191
TOTAL ORDERED	**5,537**	**7,892**	**3,539**	**19,427**	**52,181**

ON ORDER AND UNDELIVERED

	May 1		April 1	Average Backlog	
	1980	1979	1980	1980	1979
To be built new by carbuilders	84,847	114,889	96,165	98,708	106,834
To be built new in RR shops	7,093	5,078	4,790	5,767	5,887
To be built new - total	91,940	119,967	100,955	104,475	112,721
To be rebuilt	432	59	577	642	126
TOTAL ON ORDER	***92,372**	**120,026**	**101,532**	**105,117**	**112,847**
Locomotives	1,083	1,065	1,114	1,194	1,203

*Due to revisions and cancellations of some orders, the backlog has been reduced by 6,623 cars. Cumulative figures for car orders and deliveries have also been adjusted.